

Application Serial No.: 10/820,236
Attorney Docket No.: 2156-608A

Examiner: C. Sullivan
Art Unit: 1756

REMARKS

Claims 1 and 3-20 are pending in the present application and claim 1 has been amended.

Rejections Under 35 U.S.C. § 103

Claims 1 and 3-20 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Thomas in view of Minter and further in view of Lawson.

The Examiner asserts that Thomas broadly describes all of the features of the claimed invention except that the first film layer develops faster than the second film layer and the particular curing speed and uses Minter and Lawson to cure the deficiencies of Thomas. The Examiner asserts that Lawson describes that the curing speed of a radiation curable compound is affected by the concentration of acrylate groups present in the compound and that as the concentration of the polyacrylate increases in the composition that the viscosity and cure speed of the composition decreases. The Examiner then concludes that it would be obvious to optimize the composition of the film layers to obtain the development dwell times and curing speeds recited by Applicant.

Applicant respectfully disagrees.

Thomas does not describe or suggest that the first and second photoimageable layers have different properties, i.e., faster/slower development times and/or curing speeds so that clean non-ragged edge can be obtained between the substrate and the deposited metal on the substrate after the first and second photoimageable layers are stripped from the substrate. While it is acknowledged that Thomas does disclose that the two layers are developed with a developer capable of developing both layers, this is true only because both layers have the same composition. There is no teaching or suggestion that the layers have a different formulation as in the present invention. Thus, while Thomas does describe multiple dry-film layers, it is only for the purpose of increasing the

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thickness of the resist (see e.g., column 5, lines 20-25) and not for obtaining clean non-ragged edges between the substrate and the deposited metal after the two photoimageable layers are stripped. As discussed in Applicants' previous response, the difference in development property produces a T-shaped photoresist sandwich that eliminates ragged lines along the interface between the substrate and the photoresist (see page 3, lines 8-13 of the specification).

For all of these reasons, Thomas does not describe or suggest layers have different properties and cannot anticipate or render obvious the claimed invention.

Furthermore, Minter does not cure the deficiencies of Thomas because while Minter does describe two different photoresists, the two photoresist compositions are not developable in the same developer as in the present application. The Examiner has taken a teaching of two layers containing the same materials (Thomas), which would of course be developable in the same developer, and combined this with a teaching of two different materials that are developed in two different developers (Minter) to conclude that it would be obvious to develop two materials having different properties in a single developer. Applicants respectfully submit that there is no teaching or suggestion in either reference as to this possibility. The only teaching of the use of two photoresists with different properties that are developable in the same developer comes from Applicants' own disclosure. Thus, it is respectfully submitted that the combined teachings of Thomas and Minter do not and cannot render obvious the claimed invention.

As discussed in the previous response, the Examiner's attention is directed to column 7, lines 16-22 of Minter, in which it is explained that the first and second photoresist compositions have different solubilities in their respective developers. That is the first photoresist, both before and after exposure should be substantially insoluble in the developer for the second photoresist and the second photoresist, both before and after exposure should be substantially insoluble in the developer for the first photoresist. Thus, it is clear that Minter does not describe or suggest layers that have different

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properties and that are developable in the same developer as described and claimed herein by Applicants.

Finally, the Examiner cites Lawson for its teaching that the curing speed of a radiation curable compound is affected by the concentration of acrylate groups present in the molecule and concludes based on this disclosure that it would be obvious to optimize the composition of the dry-film photoresist to obtain the recited development dwell times and curing speeds.

Applicants respectfully disagree. The passage in Lawson cited by the Examiner is reproduced below:

The *exact proportion of polyol* has a bearing on the physical properties of the radiation curable compositions of the invention. The *greater the proportion of aliphatic polyol* employed in preparing the polyester polyol, the greater will be the concentration of acrylate groups and the greater the amount of polyol acrylate from unreacted polyol in the final polyacrylate composition prepared according to the method of the invention. In turn, *as the concentration of polyol acrylate increases, the viscosity and cure speed of the compositions of the invention decrease*. Conversely, the polyacrylate composition with the highest viscosity (lowest polyol acrylate concentration) cures almost three times faster than the polyacrylate of lowest viscosity (emphasis added).

Lawson does not in fact disclose that the curing speed of the radiation curable compound is affected by the concentration of the acrylate but rather that the proportion of the aliphatic polyol affects the concentration of acrylate groups. As can be seen from Thomas and Minter, neither of these references describe or suggest an aliphatic polyol in the acrylic resin formulation and thus the teaching in Lawson that the aliphatic polyol affects the curing speed of the resin has no bearing on the photoresist materials described by Thomas and Minter. Thus Lawson does not cure any of the noted deficiencies of Thomas and Minter and the combination of Thomas in view of Minter and Lawson does not anticipate or render obvious the claimed invention.

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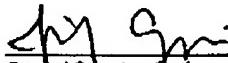
For all of these reasons, reconsideration and withdrawal of the rejection of claims 1 and 3-20 as being unpatentable over Thomas in view of Minter and Lawson is respectfully requested.

CONCLUSION

Applicant believes that the foregoing is a full and complete response to the Office Action of record. Accordingly, an early and favorable reconsideration of all of the claims is requested. Applicant believes that claims 1 and 3-20 are now in condition for allowance and an indication of allowability and an early Notice of Allowance of all of the claims is respectfully requested.

If Examiner feels that a telephonic interview would be helpful, she is requested to call the undersigned at (203) 575-2648 prior to the issuance of the next office action.

Respectfully submitted,


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